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Charting the Electronics Path

Event recorder usage is poised to become a mainstream monitoring tool for vehicle electronics. The U.S. Army Tank-Automotive & Armaments Command (TACOM)'s COMBATT (commercially based tactical truck) evaluation project will include an event recorder on modified full-size pick-up trucks (Ford F350 super duty platform, Dodge Ram 2500/3500 platform) as well as a modified HMMWV (High Mobility Multipurpose Wheeled Vehicle). "With real-time data recording, we can pinpoint when something went wrong and why it went wrong," says Elio DiVito, Electrical Engineer at TACOM's National Automotive Center. An event recorder integrates information from multiple systems, such as engine, transmission, and anti-lock brakes. "From an accident reconstruction or equipment failure standpoint, this is important data. And from a maintenance and diagnostic standpoint, an event recorder can be very helpful. Such a device helps you be a detective by giving you more information," DiVito says.

Unlike an electronic module that gathers data from that module only, an event recorder collects information from multiple vehicle areas with a memory capacity greater than that of a single electronic module. "The event recorder can be used on any vehicle with a databus. Although the U.S. Army has only three vehicles with a databus (palletized load system, family medium tactical vehicles, heavy equipment transport system/tank haulers), the likely future is re-manufactured vehicles with increased electronic content," DiVito says. COMBATT's first demonstration and evaluation prototypes are expected by the end of 1999.

As for production carry-over of event recorders, Ford Motor Co. equipped almost all 1999 model year vehicles with event data recorders. "It captures a limited amount of information, like how much the vehicle slows, when the algorithms are activated, and when an airbag deploys," says Jennifer Flake, Ford Public Affairs Safety Manager. Although the recorded data stored in the airbag control module remains untapped, a retrieval device for consumer vehicles is under development. "Ford wants to analyze and use real-world data to help enhance our vehicle safety systems," Flake explains.

Standards (relating to pooling data, consumer privacy issues, and the like) are being spearheaded by the Motor Vehicle Safety Research Advisory Council. GM has used a vehicle sensing and diagnosticmodule (SDM) to record information about the readiness of airbag systems — when sensors areactivated — and driver's safety belt usage at deployment or at near-deployment.

"GM research engineers have now used advancements in technology to connect the SDM to a localarea network within the vehicle," notes Terry Rhadigan, Manager of Safety Issues on GM'scommunications staff. The advanced event recorder stores vehicle speed, engine speed, throttleposition, and brake use — at one second intervals — taken

just prior to a crash. "The recorded data isavailable for retrieval and evaluation even if the battery has been disconnected or SDM box has beenunplugged," notes Rhadigan.

GM uses a proprietary Event Recorder Retrieval Unit that interfaces with a standard Tech 1 scan toolto download data through the vehicle diagnostic connector. So that data can be shared withresearchers, GM will use Vetronix Corporation's software and interface cables linking to a laptopcomputer. (The Santa Barbara company's retrieval kits are scheduled for release this year.) Anenhanced SDM was installed on select 1999 model year vehicles: Buick Century, Park Avenue, andRegal; Cadillac Eldorado, DeVille, and Seville; Chevrolet Camaro and Corvette; and Pontiac Firebird. Over the next four to five years, GM expects to have the advanced event recorder on all of its vehicles(including Saturn).